REMARKS/ARGUMENTS

Claims 1-11 are pending in this application. Claims 1-11 were rejected. The drawings were objected to. In view of the foregoing amendments and the following remarks, it is respectfully submitted that all of the presently pending claims are allowable, and reconsideration is respectfully requested.

1. Objections to the drawings

Fig.1 and Fig.2 were objected to. In particular, Fig.1 was objected to for not illustrating "the roll angle f" disclosed in the specification. Fig.2 was objected to for mismatches in symbols, specifically the substitution of the Greek letter "ϕ" for the Latin letter "f". Applicants submit that both inconsistencies were due to typographical errors, which errors also caused inconsistencies between the Greek letter "χ" and the Latin letter "c". The drawings and the corresponding paragraph in the specification have been amended to correct the errors. Since the typographical errors were obvious from the context, Applicants submit that no new matter has been added. Fig.2 was objected to for not including descriptions in boxes 204, 206, 207 and 208. The drawings have been amended according to the Examiner's recommendations. In view of the foregoing amendments, Applicants respectfully request withdrawal of the objections.

2. Rejection of Claim 9 (35 U.S.C. § 112)

Claim 9 was rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. Applicants submit that the claimed subject matter is quite definite, particularly when viewed in light of the specification. While the rejection may not be agreed with, claim 9 has been amended to facilitate expedited prosecution. No new matter has been added. Applicants submit that Claim 9 is allowable, and Applicants respectfully request withdrawal of the rejection.

3. Rejection of Claims 1-4, 6-7, 9-11 (35 U.S.C. § 103(a))

Claims 1-4, 6-7, and 9-11 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,825,284 (Dunwoody et al.) in view of U.S. Patent Appl. No. 2003/0236603 (Lu). Applicants submit that the rejection should be withdrawn for at least the following reasons.

Dunwoody et al. disclose a system and method for detecting vehicle rollover conditions, where the rollover condition is identified on the basis of two parameters: The lateral load transfer (LLT) and the center of gravity height. Lu discloses a system for sensing vehicle global and relative attitudes using suspension height sensors.

In order for a claim to be rejected for obviousness under 35 U.S.C. § 103(a), the prior art reference(s) must teach or suggest all of the claim limitations. M.P.E.P. § 2143.03. *In re Royka*, 490 F.2d 981, 180 U.S.P.Q. 580 (C.C.P.A. 1974). Claim 1 recites "the center-of-gravity height being ascertained **only in predefined driving conditions**, the predefined driving conditions being **a function of a change in a roll rate per unit of time**." Claim 11 recites substantially similar limitations. While the Examiner concedes that Dunwoody does not disclose ascertaining the center of gravity height only according to a function of a change in the roll rate, the Examiner nevertheless contends that this claimed feature would have been obvious because: a) Dunwoody teaches ascertaining the center of gravity height only when the lateral acceleration is above a certain threshold; and b) "Lu teaches that the change of roll rate could be determined by the lateral acceleration." Applicants note that the obviousness conclusion is not supported by the actual teachings of the applied references, as explained below.

Lu discloses calculating the angular roll acceleration from the suspension height sensor and the longitudinal and lateral accelerations. We repeat here Eq.(6) from Lu, page 4:

$$d\omega_x/dt = f_x\,(F_{slf}, F_{srf}, F_{slr}, F_{srr}, F_{arf}, F_{arr}, \mathbf{a_x})$$

where the lateral acceleration a_x has been highlighted in boldface. It is clear that the calculation of the angular roll acceleration of Lu is a function of *seven* parameters of which the *last one only* is the lateral acceleration. The six preceding parameters are computed from four suspension height sensors located at the four wheels (para. 0035 and 0038; for consistency between equations, the parameters F_{arf}, F_{arr} in Eq.(6) should probably be read as τ_{arf}, τ_{arr}). The calculation of the roll angular acceleration is not accomplished using *only* the lateral acceleration; instead, additional information is needed. Accordingly, it is quite clear that the combination of Dunwoody et al. and Lu fails to teach or suggest all the limitations of Claim 1, in particular "the center-of-gravity height being **ascertained only in predefined driving conditions, the predefined driving conditions being a function of a change in a roll rate per unit of time**."

For at least the foregoing reasons, Applicants submit that claims 1 and 11, as well as dependent claims 2-4, 6-7 and 9-10, are allowable over the combination of Dunwoody and Lu.

Independent of the above, regarding Claim 4, it is alleged in the Office Action that "determining the roll angle by integration of the roll rate . . . would have been well known." Since it appears the Examiner is relying on personal knowledge, Applicants traverse the Official Notice and respectfully request that the Examiner cite a reference or provide an affidavit in support of the rejection. *See* MPEP § 2144.03.

Independent of the above, regarding Claim 7, Applicants respectfully submit that neither Dunwoody nor Lu teaches or suggests ascertaining the center-of-gravity height only in "driving conditions in which an amount of the change in the roll rate per unit of time is less than a factor multiplied by an amount of the variable representing the lateral acceleration."

Independent of the above, Applicants note that Claim 9, as currently amended, recites that "the center-of-gravity height is ascertained . . . as a further function of a change in the roll angle between the two driving conditions and a change in the variable representing the lateral acceleration between the two driving conditions." Regarding Claim 9, it is alleged in the Office Action that "selecting appropriate situation to ascertain the center or gravity height would have been an obvious design choice." Applicants respectfully submit that the claim does not simply refer to "appropriate situation." In particular, neither Dunwoody nor Lu teaches or suggests calculating or measuring "a change in the roll angle between the two driving conditions" and "a change in the variable representing the lateral acceleration between the two driving conditions."

Independent of the above, regarding Claim 10, it is alleged in the Office Action that "using the mass of the vehicle in determining the center-of-gravity height . . . would have been well known." Since it appears the Examiner is relying on personal knowledge, Applicants traverse the Official Notice and respectfully request that the Examiner cite a reference or provide an affidavit in support of the rejection. See MPEP § 2144.03.

Further regarding Claim 10, Applicants note that the claim recites an "estimated mass of the vehicle," which feature is clearly explained in the specification. None of the applied references in the Office Action teaches or suggests estimating a mass of the vehicle, as opposed to measuring the total mass of the vehicle plus the total load. For example, Dunwoody discusses directly measuring the total mass of the vehicle by use of truck scales or pressure sensors (col.12, lines 38-54).

For at least the foregoing reasons, Applicants submit that Claims 1-4, 6-7, and 9-11 are allowable, and Applicants respectfully request withdrawal of the rejection.

4. Rejection of Claim 5 (35 U.S.C. § 103(a))

Claim 5 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Dunwoody in view of Lu, and further in view of U.S. Patent Appl. No. 2002/0109310 (Lim). Applicants submit that the rejection should be withdrawn for at least the following reasons.

First of all, Claim 1 has been shown to be allowable, therefore its dependent Claim 5 is similarly allowable. Moreover, Lim generally describes a vehicle stability system using various methods to resist rollover. Claim 5 recites "ascertaining a product of a mass of a payload of the vehicle and a center-of-gravity height of the payload." Applicants submit that this limitation is not taught or suggested by Lim; rather, Lim teaches that "the position of the center of gravity can be mathematically determined from the mass of the individual elements of the vehicle along with the location and mass of the vehicle cargo and passengers" (para.0043). The latter is a statement of fact that may be found in any physics textbook: The center of gravity is the weighted average of the positions of all elements of a system. However, nowhere in the disclosure of Lim is it taught or suggested that a product of a mass of a payload of the vehicle and a center-of-gravity height of the payload is **ascertained** in order to ascertain a center-of-gravity height.

In view of the foregoing remarks, Applicant submits that Claim 5 is allowable and respectfully request withdrawal of the rejection.

5. Rejection of Claim 8 (35 U.S.C. § 103(a))

Claim 8 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Dunwoody in view of Lu, and further in view of U.S. Patent No. 6,502,023 (Fukada). Applicants submit that the rejections should be withdrawn for at least the following reasons.

First of all, Claim 1 has been shown to be allowable, therefore its dependent Claim 8 is similarly allowable.

Moreover, in order to render a claim obvious based on a combination of references, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine the reference teachings. *See* M.P.E.P. § 2143.01. Claims 8 recites "ascertaining whether a road surface has a gradient in a vehicle transverse direction, the center-of-gravity height being ascertained only in the case of a roadway which is one of (a) not inclined and (b) only negligibly inclined in the vehicle transverse direction." Fukada generally describes a device for estimating a rolling condition of a vehicle body. Fukada discusses examining the angle θ of lateral inclination of the road surface to check whether this inclination may cause a substantial error in estimating the lateral acceleration (col.6, lines 18-20). The effect of a lateral inclination on a measured lateral acceleration is different from the effect of the same inclination on the calculation of a center of gravity. It should be noted that, in the present invention, the effect of the lateral inclination on the sensed lateral acceleration alone is automatically taken into account by virtue of Eq.(2) (specification, page 6). Applicants respectfully traverse the proposed combination of

Dunwoody and Fukada in an attempt to approximate the present invention, since the proposed combination is based on an improper hindsight reconstruction rather than on a suggestion from the references that is "clear and particular." *In re Dembiczak*, 50 U.S.P.Q.2d 1614 (Fed. Cir. 1999).

For at least the foregoing reasons, Applicants submit that Claim 8 is allowable and respectfully request withdrawal of all rejections.

CONCLUSION

In view of the above amendments and remarks, it is respectfully submitted that all of the presently pending claims are allowable. All issues raised by the Examiner having been addressed, an early and favorable action on the merits is earnestly solicited.

The Office is authorized to charge any fees associated with this Amendment to Kenyon & Kenyon Deposit Account No. 11-0600.

Respectfully Submitted,
KENYON & KENYON

Dated: 12/1/04

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AMENDMENTS TO THE DRAWINGS

The attached three sheets of drawings include changes to Fig. 1-3. These sheets, which include Fig. 1-3, replace the original sheets including Fig. 1-3. In Fig.1, 2 and 3, the Greek letter ϕ has been replaced by the letter **f**. In Fig.2, descriptive labels have been added to elements 204, 206, 207 and 208.

Attachment: 3 Replacement Sheets